<110> Iourgenko, Vadim
     Labow, Mark A.
     Song, Chuanzheng
     Zhang, Wenjun
     Zhu, Jian

<120> Cyclic AMP Response Element Activator
 Proteins and Uses Related Thereto

<130> 4-32999P2

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        35                  40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
    50                  55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Gly Thr Met Asp Leu Pro Phe
65                  70                  75                  80
Gln Pro Ser Gly Phe Leu Gly Glu Ala Leu Ala Ala Ala Pro Val Ser
                85                  90                  95
Leu Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
            100                 105                 110
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
        115                 120                 125
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
    130                 135                 140
Asp Ser Cys Pro Tyr Gly Thr Met Tyr Leu Ser Pro Pro Ala Asp Thr
145                 150                 155                 160
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala Leu His Gln Ser Thr Met
                165                 170                 175
Thr Pro Thr Gln Pro Glu Ser Phe Ser Ser Gly Ser Gln Asp Val His
            180                 185                 190
Gln Lys Arg Val Leu Leu Leu Thr Val Pro Gly Met Glu Glu Thr Thr
        195                 200                 205
Ser Glu Ala Asp Lys Asn Leu Ser Lys Gln Ala Trp Asp Thr Lys Lys
    210                 215                 220
Thr Gly Ser Arg Pro Lys Ser Cys Glu Val Pro Gly Ile Asn Ile Phe
225                 230                 235                 240
Pro Ser Ala Asp Gln Glu Asn Thr Thr Ala Leu Ile Pro Ala Thr His
                245                 250                 255
Asn Thr Gly Gly Ser Leu Pro Asp Leu Thr Asn Ile His Phe Pro Ser
            260                 265                 270
Pro Leu Pro Thr Pro Leu Asp Pro Glu Glu Pro Thr Phe Pro Ala Leu
        275                 280                 285
Ser Ser Ser Ser Ser Thr Gly Asn Leu Ala Ala Asn Leu Thr His Leu
    290                 295                 300
Gly Ile Gly Gly Ala Gly Gln Gly Met Ser Thr Pro Gly Ser Ser Pro
305                 310                 315                 320
Gln His Arg Pro Ala Gly Val Ser Pro Leu Ser Leu Ser Thr Glu Ala
                325                 330                 335
Arg Arg Gln Gln Ala Ser Pro Thr Leu Ser Pro Leu Ser Pro Ile Thr
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385                    390                  395                  400
Pro Pro Gln Ala Pro Val Arg Leu Pro Pro Gly Gly Pro Leu Leu Pro
                   405                  410                  415
Ser Ala Ser Leu Thr Arg Gly Pro Gln Pro Pro Pro Leu Ala Val Thr
              420                    425                  430
Val Pro Ser Ser Leu Pro Gln Ser Pro Pro Glu Asn Pro Gly Gln Pro
         435                    440                  445
Ser Met Gly Ile Asp Ile Ala Ser Ala Pro Ala Leu Gln Gln Tyr Arg
    450                    455                  460
Thr Ser Ala Gly Ser Pro Ala Asn Gln Ser Pro Thr Ser Pro Val Ser
465                    470                  475                  480
Asn Gln Gly Phe Ser Pro Gly Ser Ser Pro Gln His Thr Ser Thr Leu
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Gly Ser Val Phe Gly Asp Ala Tyr Tyr Glu Gln Gln Met Ala Ala Arg
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Ile Ile Leu Thr Val Thr Gly Glu Ser Pro Pro Ser Leu Ser Lys Glu
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         595                    600                  605
Ser Gln Phe Pro Leu Asp Glu Leu Lys Ile Asp Pro Leu Thr Leu Asp
    610                    615                  620
Gly Leu His Met Leu Asn Asp Pro Asp Met Val Leu Ala Asp Pro Ala
625                    630                  635                  640
Thr Glu Asp Thr Phe Arg Met Asp Arg Leu
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<220>
<223> primer

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<211> 23
<212> DNA
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<220>
<223> primer

<400> 4
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<212> DNA
<213> Artificial Sequence

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<223> primer

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<212> DNA
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<400> 6
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Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met Met Asp Ile Gly
        35                  40                  45
Ser Thr Arg Leu Gln Ala Gln Lys Leu Arg Leu Ala Tyr Thr Arg Ser
    50                  55                  60
Ser His Tyr Gly Gly Ser Leu Pro Asn Val Asn Gln Ile Gly Ser Gly
65                  70                  75                  80
Leu Ala Glu Phe Gln Ser Pro Leu His Ser Pro Leu Asp Ser Ser Arg
                85                  90                  95
Ser Thr Arg His His Gly Leu Val Glu Arg Val Gln Arg Asp Pro Arg
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        130                     135                     140
Arg Thr Met Ala Trp Gly Asn Phe Pro Ala Glu Lys Gly Gln Leu Phe
145                     150                     155                     160
Arg Leu Pro Ser Ala Leu Asn Arg Thr Ser Ser Asp Ser Ala Leu His
                165                     170                     175
Thr Ser Val Met Asn Pro Ser Pro Gln Asp Thr Tyr Pro Gly Pro Thr
            180                     185                     190
Pro Pro Ser Ile Leu Pro Ser Arg Arg Gly Gly Ile Leu Asp Gly Glu
            195                     200                     205
Met Asp Pro Lys Val Pro Ala Ile Glu Glu Asn Leu Leu Asp Asp Lys
    210                     215                     220
His Leu Leu Lys Pro Trp Asp Ala Lys Lys Leu Ser Ser Ser Ser Ser
225                     230                     235                     240
Arg Pro Arg Ser Cys Glu Val Pro Gly Ile Asn Ile Phe Pro Ser Pro
                245                     250                     255
Asp Gln Pro Ala Asn Val Pro Val Leu Pro Pro Ala Met Asn Thr Gly
                260                     265                     270
Gly Ser Leu Pro Asp Leu Thr Asn Leu His Phe Pro Pro Pro Leu Pro
            275                     280                     285
Thr Pro Leu Asp Pro Glu Glu Thr Ala Tyr Pro Ser Leu Ser Gly Gly
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Asn Ser Thr Ser Asn Leu Thr His Thr Met Thr His Leu Gly Ile Ser
305                     310                     315                     320
Arg Gly His Gly Pro Gly Pro Gly Tyr Asp Ala Pro Gly Leu His Ser
                325                     330                     335
Pro Leu Ser His Pro Ser Leu Gln Ser Ser Leu Ser Asn Pro Asn Leu
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        355                     360                     365
His Pro Ser Leu Pro Ala Ser Ser Leu Ala Cys His Val Leu Pro Thr
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Thr Ser Leu Gly His Pro Ser Leu Ser Ala Pro Ala Leu Ser Ser Ser
385                     390                     395                     400
Ser Ser Ser Ser Ser Thr Ser Ser Pro Val Leu Gly Ala Pro Ser Tyr
                405                     410                     415
Pro Ala Ser Thr Pro Gly Ala Ser Pro His His Arg Arg Val Pro Leu
            420                     425                     430
Ser Pro Leu Ser Leu Leu Ala Gly Pro Ala Asp Ala Arg Arg Ser Gln
        435                     440                     445
Gln Gln Leu Pro Lys Gln Phe Ser Pro Thr Met Ser Pro Thr Leu Ser
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Ser Ile Thr Gln Gly Val Pro Leu Asp Thr Ser Lys Leu Ser Thr Asp
465                     470                     475                     480
Gln Arg Leu Pro Pro Tyr Pro Tyr Ser Ser Pro Ser Leu Val Leu Pro
                485                     490                     495
Thr Gln Pro His Thr Pro Lys Ser Leu Gln Gln Pro Gly Leu Pro Ser
            500                     505                     510
Gln Ser Cys Ser Val Gln Ser Ser Gly Gly Gln Pro Pro Gly Arg Gln
        515                     520                     525
Ser His Tyr Gly Thr Pro Tyr Pro Pro Gly Pro Ser Gly His Gly Gln
    530                     535                     540
Gln Ser Tyr His Arg Pro Met Ser Asp Phe Asn Leu Gly Asn Leu Glu
545                     550                     555                     560
Gln Phe Ser Met Glu Ser Pro Ser Ala Ser Leu Val Leu Asp Pro Pro
                565                     570                     575
Gly Phe Ser Glu Gly Pro Gly Phe Leu Gly Gly Glu Gly Pro Met Gly
            580                     585                     590
Gly Pro Gln Asp Pro His Thr Phe Asn His Gln Asn Leu Thr His Cys
    595                     600                     605
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Ser Arg His Gly Ser Gly Pro Asn Ile Ile Leu Thr Gly Asp Ser Ser
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Phe Glu Val Ser Ala Ala Gly Leu Glu Leu Gly Leu Gly Leu Glu Asp
            645             650             655
Glu Leu Arg Met Glu Pro Leu Gly Leu Glu Gly Leu Asn Met Leu Ser
            660             665             670
Asp Pro Cys Ala Leu Leu Pro Asp Pro Ala Val Glu Glu Ser Phe Arg
            675             680             685
Ser Asp Arg Leu Gln
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<213> human

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<212> PRT
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<400> 18
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<210> 19
<211> 7
<212> PRT
<213> unknown

<220>
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<400> 19
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 1   5

<210> 20
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 20
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<210> 21
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<213> Artificial Sequence

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<210> 22
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<400> 22
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<210> 23
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 23
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ccg   63

<210> 24
<211> 2259
<212> DNA
<213> human

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<213> human

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Phe Glu Gln Leu Met Thr Asp Leu Thr Leu Ser Arg Val Gln Phe Gln
        35                  40                  45
Lys Leu Gln Gln Leu Arg Leu Thr Gln Tyr His Gly Gly Ser Leu Pro
    50                  55                  60
Asn Val Ser Gln Leu Arg Ser Asn Ala Ser Glu Phe Gln Pro Ser Phe
65                  70                  75                  80
His Gln Ala Asp Asn Val Arg Gly Thr Arg His His Gly Leu Val Glu
                85                  90                  95
Arg Pro Ser Arg Asn Arg Phe His Pro Leu His Arg Arg Ser Gly Asp
            100                 105                 110
Lys Pro Gly Arg Gln Phe Asp Gly Ser Ala Phe Gly Ala Asn Tyr Ser
        115                 120                 125
Ser Gln Pro Leu Asp Glu Ser Trp Pro Arg Gln Gln Pro Pro Trp Lys
    130                 135                 140
Asp Glu Lys His Pro Gly Phe Arg Leu Thr Ser Ala Leu Asn Arg Thr
145                 150                 155                 160
Asn Ser Asp Ser Ala Leu His Thr Ser Ala Leu Ser Thr Lys Pro Gln
                165                 170                 175
Asp Pro Tyr Gly Gly Gly Gln Ser Ala Trp Pro Ala Pro Tyr Met
            180                 185                 190
Gly Phe Cys Asp Gly Glu Asn Asn Gly His Gly Glu Val Ala Ser Phe
            195                 200                 205
Pro Gly Pro Leu Lys Glu Glu Asn Leu Leu Asn Val Pro Lys Pro Leu
        210                 215                 220
Pro Lys Gln Leu Trp Glu Thr Lys Glu Ile Gln Ser Leu Ser Gly Arg
225                 230                 235                 240
Pro Arg Ser Cys Asp Val Gly Gly Gly Asn Ala Phe Pro His Asn Gly
                245                 250                 255
Gln Asn Leu Gly Leu Ser Pro Phe Leu Gly Thr Leu Asn Thr Gly Gly
            260                 265                 270
Ser Leu Pro Asp Leu Thr Asn Leu His Tyr Ser Thr Pro Leu Pro Ala
        275                 280                 285
Ser Leu Asp Thr Thr Asp His His Phe Gly Ser Met Ser Val Gly Asn
    290                 295                 300
Ser Val Asn Asn Ile Pro Ala Ala Met Thr His Leu Gly Ile Arg Ser
305                 310                 315                 320
Ser Ser Gly Leu Gln Ser Ser Arg Ser Asn Pro Ser Ile Gln Ala Thr
                325                 330                 335
Leu Asn Lys Thr Val Leu Ser Ser Ser Leu Asn Asn His Pro Gln Thr
```

```
                      340                    345                          350
Ser Val Pro Asn Ala Ser Ala Leu His Pro Ser Leu Arg Leu Phe Ser
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Leu Ser Asn Pro Ser Leu Ser Thr Thr Asn Leu Ser Gly Pro Ser Arg
        370                        375                    380
Arg Arg Gln Pro Pro Val Ser Pro Leu Thr Leu Ser Pro Gly Pro Glu
385                        390                    395                    400
Ala His Gln Gly Phe Ser Arg Gln Leu Ser Ser Thr Ser Pro Leu Ala
                        405                    410                    415
Pro Tyr Pro Thr Ser Gln Met Val Ser Ser Asp Arg Ser Gln Leu Ser
                420                        425                    430
Phe Leu Pro Thr Glu Ala Gln Ala Gln Val Ser Pro Pro Pro Pro Tyr
            435                    440                    445
Pro Ala Pro Gln Glu Leu Thr Gln Pro Leu Leu Gln Gln Pro Arg Ala
    450                        455                    460
Pro Glu Ala Pro Ala Gln Gln Pro Gln Ala Ala Ser Ser Leu Pro Gln
465                        470                    475                    480
Ser Asp Phe Gln Leu Leu Pro Ala Gln Gly Ser Ser Leu Thr Asn Phe
                485                        490                    495
Phe Pro Asp Val Gly Phe Asp Gln Gln Ser Met Arg Pro Gly Pro Ala
                500                        505                    510
Phe Pro Gln Gln Val Pro Leu Val Gln Gln Gly Ser Arg Glu Leu Gln
            515                        520                    525
Asp Ser Phe His Leu Arg Pro Ser Pro Tyr Ser Asn Cys Gly Ser Leu
    530                        535                    540
Pro Asn Thr Ile Leu Pro Glu Asp Ser Ser Thr Ser Leu Phe Lys Asp
545                        550                    555                    560
Leu Asn Ser Ala Leu Ala Gly Leu Pro Glu Val Ser Leu Asn Val Asp
                565                        570                    575
Thr Pro Phe Pro Leu Glu Glu Glu Leu Gln Ile Glu Pro Leu Ser Leu
                580                        585                    590
Asp Gly Leu Asn Met Leu Ser Asp Ser Ser Met Gly Leu Leu Asp Pro
            595                        600                    605
Ser Val Glu Glu Thr Phe Arg Ala Asp Arg Leu
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<212> DNA
<213> drosophila melanogaster

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<210> 27
<211> 797
<212> PRT
<213> drosophila melanogaster

<400> 27
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                20                  25                  30
Tyr Ala Thr Lys Arg Asp Glu Pro Pro Ala Asn Gln Lys Ile Leu Asp
            35                  40                  45
Gly Leu Val Gly Gly Gln Glu Val Ser Gln Ser Ser Pro Gly Ala Gly
        50                  55                  60
Asn Gly Thr Gly Gly Gly Gly Ser Gly Ser Gly Ser Gly Ala Ser Gly
65                  70                  75                  80
Gly Gly Ala Ser Pro Asp Gly Leu Gly Gly Gly Gly Ser Pro Thr
                85                  90                  95
Ala Tyr Arg Glu Ser Arg Gly Arg Ser Val Gly Val Gly Pro Met Arg
                100                 105                 110
Arg Pro Ser Glu Arg Lys Gln Asp Arg Ser Pro Tyr Gly Ser Ser Ser
            115                 120                 125
Thr Gln Gln Thr Leu Asp Asn Gly Gln Leu Asn Pro His Leu Leu Gly
        130                 135                 140
Pro Pro Thr Ala Glu Ser Leu Trp Arg Arg Ser Ser Ser Asp Ser Ala
145                 150                 155                 160
Leu His Gln Ser Ala Leu Val Ala Gly Phe Asn Ser Asp Val Asn Ser
                165                 170                 175
Met Gly Ala Asn Tyr Gln Gln Gln His Gln Gln Gln Gln Pro
                180                 185                 190
Gly Gln Pro Arg Ser His Ser Pro His His Gly Ile Asn Arg Thr Met
            195                 200                 205
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Ser Pro Gln Ala Gln Arg Arg Lys Ser Pro Leu Leu Gln Pro His Gln
210   215   220

Leu Gln Leu Gln Gln Leu Gln Gln Gln Gln Gln Met Gln His Gln
225   230   235   240

His Gln Leu His Gln Gln Leu Gln Met Gln Gln Leu Gln Gln His Gln
              245   250   255

Gln Gln His Gln Gln Gln Gln Gln Gln Gln Asn Thr Pro Tyr Asn Asn
          260   265   270

Ala Lys Phe Thr Asn Pro Val Phe Arg Pro Leu Gln Asp Gln Val Asn
        275   280   285

Phe Ala Asn Thr Gly Ser Leu Pro Asp Leu Thr Ala Leu Gln Asn Tyr
    290   295   300

Gly Pro Gln Gln Gln Gln Gln Gln Ser Gln Gln Gln Pro Ser Gln Gln
305   310   315   320

Gln Gln Gln Leu Gln Gln Thr Leu Ser Pro Val Met Ser Pro His Asn
          325   330   335

His Arg Arg Glu Arg Asp Gln Ser Pro Ser Pro Phe Ser Pro Ala Gly
          340   345   350

Gly Gly Gly Gly Ala Gly Pro Gly Ser Pro Tyr Gln Gln Gln Gln His
          355   360   365

Ser Pro Thr Gly Asn Thr Gln Gln Gln Gln Gln His Gln Gln Pro
370   375   380

Ser Asn Ser Pro His Leu Ser Phe Thr Asn Leu Ala Thr Thr Gln Ala
385   390   395   400

Ala Val Thr Thr Phe Asn Pro Leu Pro Thr Leu Gly Pro His Asn Ala
              405   410   415

Thr Asp Tyr Arg Gln Pro Pro Asn Pro Pro Ser Pro Arg Ser Ser Pro
          420   425   430

Gly Leu Leu Ser Ser Val Ser Ala Thr Asp Leu His Ser Ser Ala Pro
          435   440   445

Ala Ser Pro Ile Arg Gln Gln Gln Gln Ala His Gln Gln Gln Gln Gln
    450   455   460

Gln Gln Gln Ala Gln Gln Gln Gln Gln Gln Phe Asp Asn Ser Tyr Asn
465   470   475   480

Ser Leu Asn Thr Ser Phe His Asn Gln Phe Glu Ile Phe Ser Leu Gly
              485   490   495

Asp Ser Asn Ser Ser Pro Glu Gln Gln Gly Phe Ala Asn Asn Phe Val
              500   505   510

Ala Leu Asp Phe Asp Asp Leu Ser Gly Gly Gly Gly Gly Gly Pro Ser
    515   520   525

Gly Gly Gly Gly Ser Asn Gly Gly Leu Thr Asn Gly Tyr Asn Lys
530   535   540

Pro Glu Met Leu Asp Phe Ser Glu Leu Ser Gly Ser Pro Glu Ala Ser
545   550   555   560

Gly Asn Asn Asn His Met Arg Arg Gly Val Ser Asn Leu Asn Asn Asn
              565   570   575

Gly Leu Ser Asn Gly Val Val Gly Ser Thr His Asn Gly Ser Thr Asn
              580   585   590

Leu Asn Gly Ala Gly Asn Asn Asn Ser Ser Ser Gly Gly Gly Thr Ala
    595   600   605

Gln Asp Pro Leu Gly Ile Thr Thr Ser Pro Val Pro Ser Pro Leu Gly
    610   615   620

Cys Pro Ser Ser Pro Leu Pro Ile Pro Ile Pro Met Ser Ala Gln Ser
625   630   635   640

Ser Pro Gln Gln Gln His His His His Gln Gln Gln Gln Gln His
              645   650   655

His Gln Gln Gln His His Gln Gln Gln Gln Leu Ser Leu Ser Leu His
          660   665   670

His Ser Pro His His Ser Pro Met His Ser Pro His His Gly Asn Ser
          675   680   685

Pro Leu Ser Ser Ser Ser Pro Val Ser His Asn Ala Cys Ser Asn Ser
    690   695   700

Asn Val Val Met Asn His Gln Gln Gln Gln Gln His His His Gln

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705                        710                   715                        720
Gln His His His Gln Gly Ser Ser Gln Ser His Thr Pro Thr Thr Ala
                       725                   730                   735
Asn Ile Pro Ser Ile Ile Phe Ser Asp Tyr Ser Ser Asn Ala Asp Tyr
                740                   745                   750
Thr Arg Glu Ile Phe Asp Ser Leu Asp Leu Asp Leu Gly Gln Met Asp
            755                   760                   765
Val Ala Gly Leu Gln Met Leu Ser Asp Gln Asn Pro Ile Met Ile Ala
            770                   775                   780
Asp Pro Asn Ile Glu Asp Ser Phe Arg Arg Asp Leu Asn
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<212> DNA
<213> mouse

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<221> misc_feature
<222> 1528
<223> n = A,T,C or G

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<212> PRT
<213> mouse

<400> 29

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Lys Asp Leu Ser Leu Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Ser
        35                  40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
    50                  55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Ser Ser Val Asp Leu Ala Phe
65                  70                  75                  80
Gln Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
                85                  90                  95
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
            100                 105                 110
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
        115                 120                 125
Asp Ser Cys Pro Tyr Gly Thr Val Tyr Leu Ser Pro Pro Ala Asp Thr
    130                 135                 140
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala Leu His Gln Ser Thr Met
145                 150                 155                 160
Thr Pro Ser Gln Ala Glu Ser Phe Thr Gly Gly Ser Gln Asp Ala His
                165                 170                 175
Gln Lys Arg Val Leu Leu Leu Thr Val Pro Gly Met Glu Asp Thr Gly
            180                 185                 190
Ala Glu Thr Asp Lys Thr Leu Ser Gln Ser Trp Asp Ser Lys Lys
        195                 200                 205
Ala Gly Ser Arg Pro Lys Ser Cys Glu Val Pro Gly Ile Asn Ile Phe
    210                 215                 220
Pro Ser Ala Asp Gln Glu Asn Thr Thr Ala Leu Ile Pro Ala Thr His
225                 230                 235                 240
Asn Thr Gly Gly Ser Leu Pro Asp Leu Thr Asn Ile His Phe Ala Ser
                245                 250                 255
Pro Leu Pro Thr Pro Leu Asp Pro Glu Pro Pro Phe Pro Ala Leu
    260                 265                 270
Thr Ser Ser Ser Ser Thr Gly Ser Leu Ala His Leu Gly Val Gly Gly
    275                 280                 285
Ala Gly Gly Met Asn Thr Pro Ser Ser Ser Pro Gln His Arg Pro Ala
    290                 295                 300
Val Val Ser Pro Leu Ser Leu Ser Thr Glu Ala Arg Arg Gln Gln Ala
305                 310                 315                 320
Gln Gln Val Ser Pro Thr Leu Ser Pro Leu Ser Pro Ile Thr Gln Ala
                325                 330                 335
Val Ala Met Asp Ala Leu Ser Leu Glu Gln Gln Leu Pro Tyr Ala Phe
            340                 345                 350
Phe Thr Gln Thr Gly Ser Gln Gln Pro Pro Pro Gln Pro Gln Pro Pro
        355                 360                 365
Pro Pro Pro Pro Pro Val Ser Gln Gln Pro Pro Pro Gln Val
    370                 375                 380
Ser Val Gly Leu Pro Gln Gly Gly Pro Leu Leu Pro Ser Ala Ser Leu
385                 390                 395                 400
Thr Arg Gly Pro Gln Leu Pro Pro Leu Ser Val Thr Val Pro Ser Thr
                405                 410                 415
Leu Pro Gln Ser Pro Thr Glu Asn Pro Gly Gln Ser Pro Met Gly Ile
            420                 425                 430
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        450             455                 460
Pro Gly Ser Ser Pro Gln His Thr Ser Thr Leu Gly Ser Val Phe Gly
465             470                 475                         480
Asp Ala Tyr Tyr Glu Gln Gln Met Thr Ala Arg Gln Ala Asn Ala Leu
                485             490                 495
Ser Arg Gln Leu Glu Gln Phe Asn Met Met Glu Asn Ala Ile Ser Ser
            500             505                 510
Ser Ser Leu Tyr Asn Pro Gly Ser Thr Leu Asn Tyr Ser Gln Ala Ala
        515             520                 525
Met Met Gly Leu Ser Gly Ser His Gly Gly Leu Gln Asp Pro Gln Gln
    530             535                 540
Leu Gly Tyr Thr Gly His Gly Gly Ile Pro Asn Ile Ile Leu Thr Val
545             550                 555                         560
Thr Gly Glu Ser Pro Pro Ser Leu Ser Lys Glu Leu Ser Ser Thr Leu
                565             570                 575
Ala Gly Val Ser Asp Val Ser Phe Asp Ser Asp His Gln Phe Pro Leu
            580             585                 590
Asp Glu Leu Lys Ile Asp Pro Leu Thr Leu Asp Gly Leu His Met Leu
        595             600                 605
Asn Asp Pro Asp Met Val Leu Ala Asp Pro Ala Thr Glu Asp Thr Phe
    610             615                 620
Arg Met Asp Arg Leu
625
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<210> 30
<211> 566
<212> PRT
<213> fugu rubripres

<400> 30
```
Met Ala Ser Ser Asn Asn Pro Arg Lys Phe Ser Glu Lys Ile Ala Leu
 1               5                  10                  15
His Asn Gln Lys Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met
            20              25                  30
Lys Asp Leu Asn Val Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Thr
        35              40                  45
Gln Tyr Leu Gln Leu Gly Gln Asn Arg Gly Gln Tyr Tyr Gly Gly Ser
    50              55                  60
Leu Pro Asn Val Asn Gln Ile Gly Asn Gly Asn Ile Asp Leu Pro Phe
65              70                  75                          80
Gln Val Ser Asn Ser Val Leu Asp Thr Ser Arg Thr Thr Arg His His
                85              90                  95
Gly Leu Val Glu Arg Val Tyr Arg Asp Arg Asn Arg Ile Ser Ser Pro
            100             105                 110
His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Arg Thr Asn
        115             120                 125
Ser Asp Ser Ala Leu His Gln Ser Ala Met Asn Pro Lys Pro His Glu
    130             135                 140
Val Phe Ala Gly Gly Ser Gln Glu Leu Gln Pro Lys Arg Leu Leu Leu
145             150                 155                         160
Thr Val Pro Gly Thr Glu Lys Ser Glu Ser Asn Ala Asp Lys Asp Ser
                165             170                 175
Gln Glu Gln Ser Trp Asp Asp Lys Lys Ser Ile Phe Pro Ser Pro Asp
            180             185                 190
Gln Glu Leu Asn Pro Ser Val Leu Pro Ala Ala His Asn Thr Gly Gly
            195             200                 205
Ser Leu Pro Asp Leu Thr Asn Ile Gln Phe Pro Pro Leu Ser Thr
    210             215                 220
Pro Leu Asp Pro Glu Asp Thr Val Thr Phe Pro Ser Leu Ser Ser Ser
```

```
225                     230                     235                     240
Asn Ser Thr Gly Ser Leu Thr Thr Asn Leu Thr His Leu Gly Ile Ser
                245                     250                     255
Val Ala Ser His Gly Asn Asn Gly Glu Lys Asn Ile Phe Phe Leu Lys
            260                     265                     270
Thr Cys Thr Ser Cys Glu Asp Val Tyr Asp Phe Tyr Phe Val Gly Ile
            275                     280                     285
Pro Thr Ser Ser Gln Thr Thr Met Thr Ala Thr Ala Gln Arg Arg Gln
        290                     295                     300
Pro Pro Val Val Pro Leu Thr Leu Thr Ser Asp Leu Thr Leu Gln Gln
305                     310                     315                     320
Ser Pro Gln Gln Leu Ser Pro Thr Leu Ser Ser Pro Ile Asn Ile Thr
                325                     330                     335
Gln Ser Met Lys Leu Ser Ala Ser Ser Leu Gln Gln Tyr Arg Asn Gln
            340                     345                     350
Thr Gly Ser Pro Ala Thr Gln Ser Pro Thr Ser Pro Val Ser Asn Gln
        355                     360                     365
Gly Phe Ser Pro Gly Ser Ser Pro Gln Pro Gln His Ile Pro Val Val
    370                     375                     380
Gly Ser Ile Phe Gly Asp Ser Phe Tyr Asp Gln Gln Leu Ala Leu Arg
385                     390                     395                     400
Gln Thr Asn Ala Leu Ser His Gln Val Cys Glu Asp Gly Arg Arg Leu
                405                     410                     415
Glu Ile Thr His Val Arg Leu Ser Arg Leu His Ala Glu Leu Cys Phe
            420                     425                     430
Cys Phe Ser Gln Leu Glu Gln Phe Asn Met Ile Glu Asn Pro Ile Ser
            435                     440                     445
Ser Thr Ser Leu Tyr Asn Gln Cys Ser Thr Leu Asn Tyr Thr Gln Ala
        450                     455                     460
Ala Met Met Gly Leu Thr Gly Ser Ser Leu Gln Asp Ser Gln Gln Leu
465                     470                     475                     480
Gly Tyr Gly Asn His Gly Asn Ile Pro Asn Ile Ile Leu Thr Ile Ser
                485                     490                     495
Val Thr Gly Glu Ser Pro Pro Ser Leu Ser Lys Glu Leu Thr Asn Ser
            500                     505                     510
Leu Ala Gly Val Gly Asp Val Ser Phe Asp Pro Asp Thr Gln Phe Pro
        515                     520                     525
Leu Asp Glu Leu Lys Ile Asp Pro Leu Thr Leu Asp Gly Leu His Met
    530                     535                     540
Leu Asn Asp Pro Asp Met Val Leu Ala Asp Pro Ala Thr Glu Asp Thr
545                     550                     555                     560
Phe Arg Met Asp Arg Leu
                565
```

<210> 31
<211> 1602
<212> DNA
<213> fugu rubripres

<400> 31
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atggcgtcct ctaacaatcc tcgcaaattt agcgaaaaaa tcgcactgca taaccagaaa 60
caagcagagg agactgctgc gttcgaagaa gtgatgaagg acctgaacgt cacaagggct 120
gcccgggtaa gacagctgca gttacagaag acccagtatt tgcaactagg gcagaatcgt 180
ggacagtact atggaggctc actgcccaat gtcaatcaga ttggaaatgg caacattgac 240
ctgccttttc aggtgagcag gacaaactca gactcagctt acatcagag tgccatgaat 300
ccaaagcccc acgaagtgtt tgctgggggg tcgcaggagc tgcagcccaa acgactgctg 360
ctaacagtgc ctggaaccga aaaatcggaa tcaaacgcag acaaagattc gcaggagcag 420
tcgtgggatg acaaaaagag tattttccca tcaccagacc aggagttaaa cccctccgtg 480
cttccagccg cgcacaacac cggcggttcg ctccccgacc tgaccaacat ccagttccct 540
cctccactgt ccacccact ggaccccgag gacaccgtca ccttcccctc cctcagctcc 600
tctaacagca caggcagtct gactaccaac ctcacccacc tgggcatcag tgtggccagc 660
catggtaata acggagagaa aaatatattt tttttaaaaa catgcacttc atgcgaggat 720
```

```
gttaaataat attacgactt ttattttgta gggattccca cttcctctca aaccaccatg 780
acagcaacag cacagcggcg gcaaccaccc gtggtccccc tcaccctcac ctctgacctg 840
actcttcaac agtccccca gcagctttca cccacccctct cctcacccat taacatcaca 900
cagagcatga agcttagtgc tagctaacat tcttccctcc aacagtaccg caatcagact 960
ggctcaccag ccactcagtc tccaacctcc ccagtctcca atcaaggctt ctcccccggc 1020
agctcgcctc aaccacagca cattcctgtg gtgggcagta tatttgggga ctccttctat 1080
gatcagcagt tggctctgag gcagaccaat gccctttctc atcaggtgtg tgaggacggc 1140
cgcaggttag aaataacaca cgtacgtctc tcacgacttc acgccgagct ttgtttttgt 1200
ttttctcagc tggagcagtt caatatgata gagaacccca tcagctccac cagcctgtac 1260
aatcagtgct ccacccttaa ttacacacag gcagccatga tgggcctcac cgggagcagc 1320
ctgcaggact cgcagcagct cggctacggc aatcacggca acatccccaa catcatactg 1380
acaatttcag tcacagggga gtctccgccg agcctctcca aagagctgac caactcattg 1440
gccggcgtcg gcgacgtcag ctttgatcca gacacgcagt ttcctctgga cgagctgaag 1500
atcgacccgc tgaccttgga cggcctgcac atgctcaacg acccagacat ggtgctggca 1560
gaccccgcca cagaggacac gttcaggatg gacaggctgt aa                     1602
```

<210> 32
<211> 170
<212> PRT
<213> human

<400> 32

```
Met Ala Thr Ser Asn Asn Pro Arg Lys Phe Ser Glu Lys Ile Ala Leu
1               5                   10                  15
His Asn Gln Lys Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met
            20                  25                  30
Lys Asp Leu Ser Leu Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Ser
        35                  40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
    50                  55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Gly Thr Met Asp Leu Pro Phe
65                  70                  75                  80
Gln Pro Ser Gly Phe Leu Gly Glu Ala Leu Ala Ala Ala Pro Val Ser
                85                  90                  95
Leu Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
            100                 105                 110
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
        115                 120                 125
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
    130                 135                 140
Asp Ser Cys Pro Tyr Gly Thr Met Tyr Leu Ser Pro Pro Ala Asp Thr
145                 150                 155                 160
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala
                165                 170
```

<210> 33
<211> 356
<212> PRT
<213> human

<400> 33

```
Met Ala Thr Ser Asn Asn Pro Arg Lys Phe Ser Glu Lys Ile Ala Leu
1               5                   10                  15
His Asn Gln Lys Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met
            20                  25                  30
Lys Asp Leu Ser Leu Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Ser
        35                  40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
    50                  55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Gly Thr Met Asp Leu Pro Phe
65                  70                  75                  80
Gln Pro Ser Gly Phe Leu Gly Glu Ala Leu Ala Ala Ala Pro Val Ser
```

```
                      85                    90                    95
Leu Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
                100                   105                   110
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
            115                   120                   125
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
        130                   135                   140
Asp Ser Cys Pro Tyr Gly Thr Met Tyr Leu Ser Pro Pro Ala Asp Thr
145                   150                   155                   160
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala Leu His Gln Ser Thr Met
                165                   170                   175
Thr Pro Thr Gln Pro Glu Ser Phe Ser Ser Gly Ser Gln Asp Val His
                180                   185                   190
Gln Lys Arg Val Leu Leu Leu Thr Val Pro Gly Met Glu Glu Thr Thr
            195                   200                   205
Ser Glu Ala Asp Lys Asn Leu Ser Lys Gln Ala Trp Asp Thr Lys Lys
        210                   215                   220
Thr Gly Ser Arg Pro Lys Ser Cys Glu Val Pro Gly Ile Asn Ile Phe
225                   230                   235                   240
Pro Ser Ala Asp Gln Glu Asn Thr Thr Ala Leu Ile Pro Ala Thr His
                245                   250                   255
Asn Thr Gly Gly Ser Leu Pro Asp Leu Thr Asn Ile His Phe Pro Ser
                260                   265                   270
Pro Leu Pro Thr Pro Leu Asp Pro Glu Glu Pro Thr Phe Pro Ala Leu
            275                   280                   285
Ser Ser Ser Ser Ser Thr Gly Asn Leu Ala Ala Asn Leu Thr His Leu
        290                   295                   300
Gly Ile Gly Gly Ala Gly Gln Gly Met Ser Thr Pro Gly Ser Ser Pro
305                   310                   315                   320
Gln His Arg Pro Ala Gly Val Ser Pro Leu Ser Leu Ser Thr Glu Ala
            325                   330                   335
Arg Arg Gln Gln Ala Ser Pro Thr Leu Ser Pro Leu Ser Pro Ile Thr
            340                   345                   350
Gln Ala Val Ala
            355
```

```
<210> 34
<211> 494
<212> PRT
<213> human

<400> 34`
Met Ala Thr Ser Asn Asn Pro Arg Lys Phe Ser Glu Lys Ile Ala Leu
1               5                   10                  15
His Asn Gln Lys Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met
                20                  25                  30
Lys Asp Leu Ser Leu Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Ser
            35                  40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
        50                  55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Gly Thr Met Asp Leu Pro Phe
65                  70                  75                  80
Gln Pro Ser Gly Phe Leu Gly Glu Ala Leu Ala Ala Ala Pro Val Ser
                85                  90                  95
Leu Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
                100                 105                 110
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
            115                 120                 125
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
        130                 135                 140
Asp Ser Cys Pro Tyr Gly Thr Met Tyr Leu Ser Pro Pro Ala Asp Thr
145                 150                 155                 160
```

```
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala Leu His Gln Ser Thr Met
            165             170                 175
Thr Pro Thr Gln Pro Glu Ser Phe Ser Ser Gly Ser Gln Asp Val His
            180             185                 190
Gln Lys Arg Val Leu Leu Leu Thr Val Pro Gly Met Glu Glu Thr Thr
        195             200                 205
Ser Glu Ala Asp Lys Asn Leu Ser Lys Gln Ala Trp Asp Thr Lys Lys
    210             215             220
Thr Gly Ser Arg Pro Lys Ser Cys Glu Val Pro Gly Ile Asn Ile Phe
225             230             235                 240
Pro Ser Ala Asp Gln Glu Asn Thr Thr Ala Leu Ile Pro Ala Thr His
            245             250                 255
Asn Thr Gly Gly Ser Leu Pro Asp Leu Thr Asn Ile His Phe Pro Ser
            260             265                 270
Pro Leu Pro Thr Pro Leu Asp Pro Glu Glu Pro Thr Phe Pro Ala Leu
        275             280                 285
Ser Ser Ser Ser Ser Thr Gly Asn Leu Ala Ala Asn Leu Thr His Leu
    290             295                 300
Gly Ile Gly Gly Ala Gly Gln Gly Met Ser Thr Pro Gly Ser Ser Pro
305             310             315                 320
Gln His Arg Pro Ala Gly Val Ser Pro Leu Ser Leu Ser Thr Glu Ala
            325             330                 335
Arg Arg Gln Gln Ala Ser Pro Thr Leu Ser Pro Leu Ser Pro Ile Thr
            340             345                 350
Gln Ala Val Ala Met Asp Ala Leu Ser Leu Glu Gln Gln Leu Pro Tyr
        355             360                 365
Ala Phe Phe Thr Gln Ala Gly Ser Gln Gln Pro Pro Pro Gln Pro Gln
    370             375             380
Pro Pro Pro Pro Pro Pro Pro Ala Ser Gln Gln Pro Pro Pro Pro Pro
385             390             395                 400
Pro Pro Gln Ala Pro Val Arg Leu Pro Pro Gly Gly Pro Leu Leu Pro
            405             410                 415
Ser Ala Ser Leu Thr Arg Gly Pro Gln Pro Pro Pro Leu Ala Val Thr
            420             425                 430
Val Pro Ser Ser Leu Pro Gln Ser Pro Pro Glu Asn Pro Gly Gln Pro
        435             440             445
Ser Met Gly Ile Asp Ile Ala Ser Ala Pro Ala Leu Gln Gln Tyr Arg
    450             455             460
Thr Ser Ala Gly Ser Pro Ala Asn Gln Ser Pro Thr Ser Pro Val Ser
465             470             475                 480
Asn Gln Gly Phe Ser Pro Gly Ser Ser Pro Gln His Thr Ser
            485             490
```

```
<210>  35
<211>  580
<212>  PRT
<213>  human

<400>  35
Met Ala Thr Ser Asn Asn Pro Arg Lys Phe Ser Glu Lys Ile Ala Leu
1               5                   10                  15
His Asn Gln Lys Gln Ala Glu Glu Thr Ala Ala Phe Glu Glu Val Met
            20              25                  30
Lys Asp Leu Ser Leu Thr Arg Ala Ala Arg Leu Gln Leu Gln Lys Ser
            35              40                  45
Gln Tyr Leu Gln Leu Gly Pro Ser Arg Gly Gln Tyr Tyr Gly Gly Ser
        50              55                  60
Leu Pro Asn Val Asn Gln Ile Gly Ser Gly Thr Met Asp Leu Pro Phe
65              70                  75                  80
Gln Pro Ser Gly Phe Leu Gly Glu Ala Leu Ala Ala Ala Pro Val Ser
            85              90                  95
Leu Thr Pro Phe Gln Ser Ser Gly Leu Asp Thr Ser Arg Thr Thr Arg
```

```
                    100                      105                      110
His His Gly Leu Val Asp Arg Val Tyr Arg Glu Arg Gly Arg Leu Gly
        115                      120                      125
Ser Pro His Arg Arg Pro Leu Ser Val Asp Lys His Gly Arg Gln Ala
    130                      135                      140
Asp Ser Cys Pro Tyr Gly Thr Met Tyr Leu Ser Pro Pro Ala Asp Thr
145                      150                      155                      160
Ser Trp Arg Arg Thr Asn Ser Asp Ser Ala Leu His Gln Ser Thr Met
                165                      170                      175
Thr Pro Thr Gln Pro Glu Ser Phe Ser Ser Gly Ser Gln Asp Val His
                180                      185                      190
Gln Lys Arg Val Leu Leu Leu Thr Val Pro Gly Met Glu Glu Thr Thr
        195                      200                      205
Ser Glu Ala Asp Lys Asn Leu Ser Lys Gln Ala Trp Asp Thr Lys Lys
    210                      215                      220
Thr Gly Ser Arg Pro Lys Ser Cys Glu Val Pro Gly Ile Asn Ile Phe
225                      230                      235                      240
Pro Ser Ala Asp Gln Glu Asn Thr Thr Ala Leu Ile Pro Ala Thr His
                245                      250                      255
Asn Thr Gly Gly Ser Leu Pro Asp Leu Thr Asn Ile His Phe Pro Ser
                260                      265                      270
Pro Leu Pro Thr Pro Leu Asp Pro Glu Glu Pro Thr Phe Pro Ala Leu
        275                      280                      285
Ser Ser Ser Ser Thr Gly Asn Leu Ala Ala Asn Leu Thr His Leu
    290                      295                      300
Gly Ile Gly Gly Ala Gly Gln Gly Met Ser Thr Pro Gly Ser Ser Pro
305                      310                      315                      320
Gln His Arg Pro Ala Gly Val Ser Pro Leu Ser Leu Ser Thr Glu Ala
                325                      330                      335
Arg Arg Gln Gln Ala Ser Pro Thr Leu Ser Pro Leu Ser Pro Ile Thr
                340                      345                      350
Gln Ala Val Ala Met Asp Ala Leu Ser Leu Glu Gln Gln Leu Pro Tyr
        355                      360                      365
Ala Phe Phe Thr Gln Ala Gly Ser Gln Gln Pro Pro Gln Pro Gln
    370                      375                      380
Pro Pro Pro Pro Pro Pro Pro Ala Ser Gln Gln Pro Pro Pro Pro Pro
385                      390                      395                      400
Pro Pro Gln Ala Pro Val Arg Leu Pro Pro Gly Gly Pro Leu Leu Pro
                405                      410                      415
Ser Ala Ser Leu Thr Arg Gly Pro Gln Pro Pro Pro Leu Ala Val Thr
                420                      425                      430
Val Pro Ser Ser Leu Pro Gln Ser Pro Pro Glu Asn Pro Gly Gln Pro
        435                      440                      445
Ser Met Gly Ile Asp Ile Ala Ser Ala Pro Ala Leu Gln Gln Tyr Arg
    450                      455                      460
Thr Ser Ala Gly Ser Pro Ala Asn Gln Ser Pro Thr Ser Pro Val Ser
465                      470                      475                      480
Asn Gln Gly Phe Ser Pro Gly Ser Ser Pro Gln His Thr Ser Thr Leu
                485                      490                      495
Gly Ser Val Phe Gly Asp Ala Tyr Tyr Glu Gln Gln Met Ala Ala Arg
                500                      505                      510
Gln Ala Asn Ala Leu Ser His Gln Leu Glu Gln Phe Asn Met Met Glu
        515                      520                      525
Asn Ala Ile Ser Ser Ser Ser Leu Tyr Ser Pro Gly Ser Thr Leu Asn
    530                      535                      540
Tyr Ser Gln Ala Ala Met Met Gly Leu Thr Gly Ser His Gly Ser Leu
545                      550                      555                      560
Pro Asp Ser Gln Gln Leu Gly Tyr Ala Ser His Ser Gly Ile Pro Asn
                565                      570                      575
Ile Ile Leu Thr
                580
```

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```
<210> 36
<211> 481
<212> PRT
<213> human

<400> 36
Ala Leu His Gln Ser Thr Met Thr Pro Thr Gln Pro Glu Ser Phe Ser
1               5                   10                  15
Ser Gly Ser Gln Asp Val His Gln Lys Arg Val Leu Leu Leu Thr Val
            20                  25                  30
Pro Gly Met Glu Glu Thr Thr Ser Glu Ala Asp Lys Asn Leu Ser Lys
        35                  40                  45
Gln Ala Trp Asp Thr Lys Lys Thr Gly Ser Arg Pro Lys Ser Cys Glu
    50                  55                  60
Val Pro Gly Ile Asn Ile Phe Pro Ser Ala Asp Gln Glu Asn Thr Thr
65              70                  75                  80
Ala Leu Ile Pro Ala Thr His Asn Thr Gly Gly Ser Leu Pro Asp Leu
            85                  90                  95
Thr Asn Ile His Phe Pro Ser Pro Leu Pro Thr Pro Leu Asp Pro Glu
            100                 105                 110
Glu Pro Thr Phe Pro Ala Leu Ser Ser Ser Ser Ser Thr Gly Asn Leu
        115                 120                 125
Ala Ala Asn Leu Thr His Leu Gly Ile Gly Gly Ala Gly Gln Gly Met
    130                 135                 140
Ser Thr Pro Gly Ser Ser Pro Gln His Arg Pro Ala Gly Val Ser Pro
145             150                 155                 160
Leu Ser Leu Ser Thr Glu Ala Arg Arg Gln Gln Ala Ser Pro Thr Leu
            165                 170                 175
Ser Pro Leu Ser Pro Ile Thr Gln Ala Val Ala Met Asp Ala Leu Ser
            180                 185                 190
Leu Glu Gln Gln Leu Pro Tyr Ala Phe Phe Thr Gln Ala Gly Ser Gln
    195                 200                 205
Gln Pro Pro Pro Gln Pro Gln Pro Pro Pro Pro Pro Pro Pro Ala Ser
    210                 215                 220
Gln Gln Pro Pro Pro Pro Pro Pro Pro Gln Ala Pro Val Arg Leu Pro
225                 230                 235                 240
Pro Gly Gly Pro Leu Leu Pro Ser Ala Ser Leu Thr Arg Gly Pro Gln
            245                 250                 255
Pro Pro Pro Leu Ala Val Thr Val Pro Ser Ser Leu Pro Gln Ser Pro
            260                 265                 270
Pro Glu Asn Pro Gly Gln Pro Ser Met Gly Ile Asp Ile Ala Ser Ala
            275                 280                 285
Pro Ala Leu Gln Gln Tyr Arg Thr Ser Ala Gly Ser Pro Ala Asn Gln
    290                 295                 300
Ser Pro Thr Ser Pro Val Ser Asn Gln Gly Phe Ser Pro Gly Ser Ser
305                 310                 315                 320
Pro Gln His Thr Ser Thr Leu Gly Ser Val Phe Gly Asp Ala Tyr Tyr
            325                 330                 335
Glu Gln Gln Met Ala Ala Arg Gln Ala Asn Ala Leu Ser His Gln Leu
            340                 345                 350
Glu Gln Phe Asn Met Met Glu Asn Ala Ile Ser Ser Ser Ser Leu Tyr
        355                 360                 365
Ser Pro Gly Ser Thr Leu Asn Tyr Ser Gln Ala Ala Met Met Gly Leu
    370                 375                 380
Thr Gly Ser His Gly Ser Leu Pro Asp Ser Gln Gln Leu Gly Tyr Ala
385                 390                 395                 400
Ser His Ser Gly Ile Pro Asn Ile Ile Leu Thr Val Thr Gly Glu Ser
            405                 410                 415
Pro Pro Ser Leu Ser Lys Glu Leu Thr Ser Ser Leu Ala Gly Val Gly
            420                 425                 430
Asp Val Ser Phe Asp Ser Asp Ser Gln Phe Pro Leu Asp Glu Leu Lys
    435                 440                 445
Ile Asp Pro Leu Thr Leu Asp Gly Leu His Met Leu Asn Asp Pro Asp
```

```
       450                  455                  460
Met Val Leu Ala Asp Pro Ala Thr Glu Asp Thr Phe Arg Met Asp Arg
465                  470                  475                  480
Leu
```


<210> 37
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 37
caacatggcc aatccgcgca agttcagcga   30

<210> 38
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 38
tcagttgagg tcgcgtcgaa aactatcct   29

<210> 39
<211> 62
<212> DNA
<213> drosophila melanogaster

<400> 39
ggagcctggc gtcagagagc ctggcgtcag agagcctggc gtcagagagc ctggcgtcag 60
ag   62